

INTEGRAL RADIATORS FOR NEXT GENERATION THERMAL CONTROL SYSTEMS, Phase I

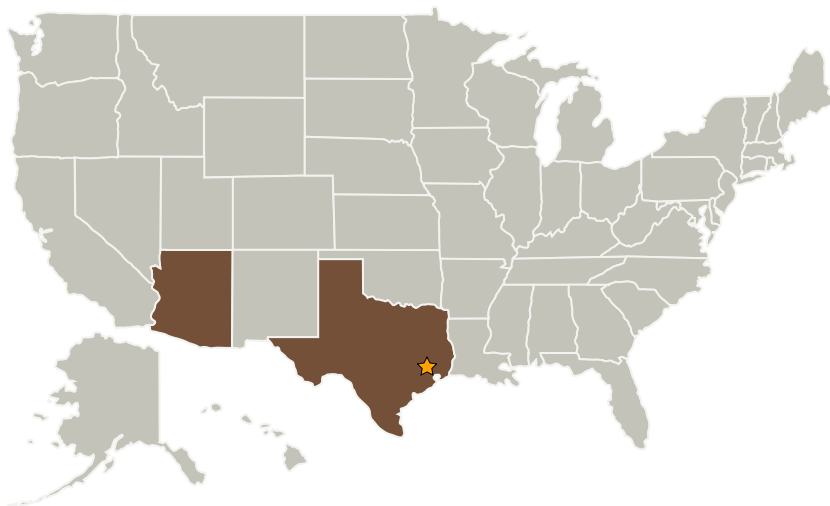
Completed Technology Project (2004 - 2004)



Project Introduction

The main goal of spacecraft thermal control systems is to maintain internal and external temperature within acceptable boundaries while minimizing impact on vehicle mass, complexity and operability. Paragon is proposing to develop an integrated radiator/structure design approach that will permit efficient thermal performance of the integral radiator while simultaneously serving as a load bearing structure member. The innovation in the proposed design is to integrate the radiator within the stressed skin of the vehicle thereby achieving a superior lb/sq ft penalty over conventional designs while establishing a baseline coating system that will survive the ground, launch pad and ascent environments. An additional possibility will be to achieve survival of coatings in a leeward reentry environment for added benefit to reusable OSP concepts. Our proposal would advance the state-of-the-art in integral radiator designs for conformal structure applications by reducing the key technology development risks so they can be considered for the next generation manned space systems, such as the OSP, as well as other applications. The central objective of the combined Phase I and Phase II work plan is to take load bearing, environmentally compatible radiator designs from the present position of TRL 3, to TRL 5 or 6.

Primary U.S. Work Locations and Key Partners



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Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Organizational Responsibility	1
Project Management	2
Technology Areas	2

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
Paragon Space Development Corporation	Supporting Organization	Industry	Tucson, Arizona

Primary U.S. Work Locations

Arizona	Texas
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Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Grant Anderson

Technology Areas

Primary:

- TX14 Thermal Management Systems
 - └ TX14.2 Thermal Control Components and Systems
 - └ TX14.2.3 Heat Rejection and Storage